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Siemens Corporation
Intellectual Property Department
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EXAMINER

TANG, KAREN C

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/728,380	NAVAS, JULIO C.	
	Examiner	Art Unit	
	Karen C Tang	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/16/02 and 7/8/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: Number 315 in Figure 8. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12, 14, 17-31, 33, 34, 37-41, 43-56, 60, 61, 62, 65, 68 and 69 are rejected under 35 U.S.C. 102(b) as being anticipated by Auerbach et al. hereinafter Auerbach (US 5,355,371).

Referring to Claim 1, Auerbach discloses

Auerbach indicates receiving a packet from a sender node over said network, wherein said packet is intended for at least one destination node having a plurality of defined characteristics, said plurality of defined characteristics being determinable by said sender node, and wherein said packet includes information on said plurality of defined characteristics (Examiner interprets the defined characteristics as the a group identification which identify the set of the trees is associate with.) refer to Fig 1 and Col 1, Lines 30-65, Col 4, Lines 25-45, Col 5, Lines 50-68, and Col 6, Lines 1-31.

Auerbach indicates said receiving step occurring at said at least one destination node having said plurality of defined characteristics refer to Col 1, Lines 30-68 and Col 7, Lines 50-68, and Col 6, Lines 1-30.

Auerbach indicates wherein said plurality of defined characteristics is a subset of or a total set of multiple, arbitrary characteristics describing aspects of said multiple nodes in said network refer to Col 6, Lines 1-31 and Col 7, Lines 19-68. Examiner interprets that the tree creates communication path to transmit a message within the network is the defined characteristics which describing aspects of said multiple nodes in said network.

Referring to Claims 22, 43, and 50, Auerbach discloses,

a plurality of nodes coupled to said network, said plurality of nodes including at least one host node and at least one routing node refer to Col 2, Lines 1-25, Col 7, Lines 35-68, and Col 3, Lines 1-30.

wherein each host node (Examiner interprets the host node as a Tree Leader's node in the reference) is capable of selecting said predefined subset of said total set of multiple arbitrary characteristics, refer to Col 7, Lines 19-68 and then sending said packet destined for all host nodes having said predefined subset, refer to Col 2, Lines 52-68 and Col 3, Lines 1-30, said packet including said predefined subset refer to Col 6, Lines 1-31.

and wherein each routing node is capable of forwarding a copy of said packet based on a stored local characteristic routing table of a discovered local topology of said network refer to Col 4, Lines 25-60, said routing table including entries based on particular characteristics of each node locally coupled to said routing node, refer to Col 2, Lines 35-68, Col 5, Lines 43-68, refer to Col 7, Lines 19-68 and Col 8, Lines 50-65.

Referring to Claim 2, Auerbach discloses

Auerbach indicates discovering a topology of said network based on said total set of multiple arbitrary characteristics, wherein said network couples said sender node, said at least one destination node, and at least one routing node refer to Col 2, Lines 35-68 and Col 4, Lines 25-60;

Auerbach indicates configuring a routing table at each routing node of said topology of network portions local respective to each routing node, said routing table including entries based on said particular characteristics of each node in said network portions refer to Col 5, Lines 50-68.

Auerbach indicates forwarding a copy of said packet based on said entries of said routing table refer to Col 5, Lines 50-68, Col 6, Lines 25-31.

Referring to Claims 3, 23, and 46, Auerbach discloses,
wherein said discovering step includes gathering information about the shortest path route between nodes in said network refer to Col 6, Lines 35-60.

Referring to Claims 4, 24, 44, and 55, Auerbach discloses,
wherein said discovering step is performed by each router node broadcasting a characteristic address resolution protocol (CharARP) query that includes said total set of multiple arbitrary characteristics, and each node on said network portions transmitting its respective characteristics in response to said CharARP query refer to Col 8, Lines 39-68 and Col 9, Lines 10-69 which Examiner interprets it describes the process of address resolution protocol (which is to identify the address that is required within the network.).

Referring to Claims 5, 25, 45, 53, Auerbach discloses,
wherein said discovering step is further performed by each new node on said network portions declaring its characteristics (Examiner interprets the declaration as to said router node local to said network portions) refer to Col 8, Lines 29-50.

Referring to Claims 6, 26, 47, and 51, Auerbach discloses
wherein said packet includes said information on said plurality of defined characteristics in a header of said packet refer to Col 1, Lines 30-55.

Referring to Claims 7, 27, 48, and 56, Auerbach discloses
wherein said IP address may be a unicast or multicast address. The method of claim 1 wherein said packet further includes an IP addresses refer to Col 1, Lines 45-68, and Col 3, Lines 1-10.

Referring to Claims 8, 28, 49, 52, 14, and 34, Auerbach discloses wherein each of said entries is a bit vector (Examiner interprets the bit vector as bits that contains different information about various message fields such as Group ID, Nodes ID, tree address, tree address correlator index,.etc) of said total set of multiple arbitrary characteristics, each of said multiple arbitrary characteristics having a predefined bit location (Examiner interprets the n-bytes field as a predefined bit location to store the bit vectors) in said bit vector refer to Col 6, Lines 1-35, Col 7, Lines 1-20.

Referring to Claims 9, 18, 29, 39, Auerbach discloses wherein said forwarding step is performed based on a result of a logical "AND" operation between said bit vectors of said entries of said routing table and a bit vector of said defined characteristics of said at least one destination node included in said packet refer to Col 1, Lines 50-70, Col 12, Lines 10-70 (Examiner interprets the AND operation as when both condition match: bit vectors of said entries of said routing table (destination address) and a bit vector of said defined characteristics(ID) of at least one destination node included in the packet)

Referring to Claims 10, 20, 30, 40, Auerbach discloses wherein if said result of said logical "AND" operation is an exact match, said packet is forwarded to said at least one destination node having said bit vector of said defined characteristic refer to Col 1, Lines 50-70, and Col 12, Lines 10-70.

Referring to Claims 11, 19, 33, and 38, Auerbach discloses wherein said forwarding step is performed based on a result of a logical "OR" operation between said bit vectors of said entries of said routing table and a bit vector of

said defined characteristics of said at least one destination node included in said packet refer to Col 9, Lines 1-10.

Referring to Claims 12, 21, 31, and 41, Auerbach discloses

wherein if said result of said logical "AND" operation is greater than zero (Examiner interprets when both condition match, the logical operation would equivalent to be greater than 0, 0 in logical operation meant when both condition does not match), said packet is forwarded to said at least one destination node having said bit vector of said defined characteristics and to at least one other node having a bit vector of some of said defined characteristics refer to Col 1, Lines 50-70, and Col 12, Lines 10-70.

Referring to Claims 17 and 37, Auerbach discloses,

wherein said forwarding step may result in forwarding of said copy of said packet to unnecessary nodes, and said method further comprising the step of sending a pruning message upstream toward said sender node from a receiving node that has forwarded said copy of said packet when both said receiving node and nodes downstream from said receiving node are not valid destinations of said packet, refer to Col 8, Lines 51-68 and Col 9, Lines 1-28.

Referring to Claim 60, Auerbach discloses,

said configuring step is performed utilizing an augmented distance vector protocol (Routing Information Protocol utilizes the distance vector protocol), Col 8, Lines 1-40.

Referring to Claim 61

said augmented distance vector protocol comprises CharBp (Examiner interprets CharBp is a routing protocol), refer to Col 1, Lines 33-55.

Referring to Claim 62, and 65, Auerbach discloses

said forwarding step is performed based on a result of a "RANGE" operation, Col 6, Lines 10-20, and Col 8, Lines 1-40.

Referring to Claim 54, Auerbach discloses

wherein said computer-readable code also enables said host node to transmit its particular characteristics if said host node receives a characteristic address resolution protocol (CharARP) query including said set of total multiple arbitrary characteristics, refer to Col 4, Lines 15-45 and Col 6, Lines 1-45.

Referring to Claim 68, Auerbach discloses

representing a set of characteristics for a characteristic destination as a bit vector refer to Col 6, Lines 1-33;

approximating the set of characteristics to provide a limit on an overall size of the bit vector representing the set of characteristics, refer to Col 6, Lines 1-45;

and transmitting over the network a control message utilizing the approximated set of characteristics, refer to Col 4, Lines 1-50 (Auerbach).

Referring to Claim 69, Auerbach discloses

said control message comprises a hierarchical control message refer to Col 2, Lines 50-69 and Col 8, Lines 25-40. Examiner interprets the passing message from the tree leader to the rest of the nodes in order, is the same as hierarchical control message.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims 15, 35, 16, 36, 70, and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach et al. hereinafter Auerbach (US 5,355,371) in view of Glover (US 5,412,429).

1). Referring to Claims 15, and 35

Auerbach discloses a sending step Refer to Col 4, Lines 30-68.

Auerbach does not expressly indicate a compression technique

Glover discloses a compression technique refer to Col 1, Lines 50-70.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach and Glover's invention. The motivation and suggestion is that Auerbach discusses there is a need to involve using high bandwidth packet traffic, thus it is important to pay attention to the bandwidth capacity in the system. By utilizing the compression technique, it can ensure that the bandwidth capacity being use wisely.

2). Referring to Claims 16, 36, and 70, Auerbach discloses (103)

wherein each of said entries is bit vector of said total set of multiple arbitrary characteristics refer to Col 2, Lines 1-25, Col 4, Lines 10-60.

Auerbach does not expressly disclose a approximated bit vector compression technique

Glover discloses a compression technique, refer to Col 1, Lines 50-70.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach and Glover's invention. The motivation and suggestion is that Auerbach discusses there is a need to involve using high bandwidth packet traffic, thus it is important to pay attention to the bandwidth capacity in the system. By utilizing the compression technique, it can ensure that the bandwidth capacity being use wisely.

3). Referring to Claim 71,

Auerbach does not expressly disclose a compression technique comprises Lempel-ziv filter.

Glover discloses compression technique comprises Lempel-ziv filters refer to Col 2, Lines 1-10.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach and Glover's invention. The motivation and suggestion is that Auerbach discusses there is a need to involve using high bandwidth packet traffic, thus it is important to pay attention to the bandwidth capacity in the system. By utilizing the compression technique which utilize the Lempel-ziv filter, it can provide the fewest occurrences of exact repetition of strings of pixels which make up a video image when user wants to compress the video picture data.

II. Claims 13, 32, 42 and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach et al. hereinafter Auerbach (US 5,355,371) in view of "Routing in the Internet" by Huitema, (page 85-120, 204, and 219).

1). Referring to Claim 57, Auerbach discloses a configuring step, refer to Col2, Lines 54-68.

Auerbach does not expressly disclose utilizing an augmented IGP.

Huitema indicates that

said configuring step utilizing an augmented IGP, refer to Second paragraph, Page 98.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Auerbach's with Huitema's invention. The suggestion/motivation for doing so would have been Auerbach discloses utilizing the routing protocol, and the routing protocols would normally involve using the internal gateway protocol for router within the same domain.

By utilizing the internal gateway protocol, it is easier for the router to communicate within the network and relies on IP address to construct paths.

2). Referring to Claim 58,

Auerbach discloses computing the shortest path refer to Col 6, Lines 35-65.

Auerbach does not expressly discloses said augmented IGP comprises CharOSPF (shortest path).

Huitema discloses IGP comprises CharOSPF, refer to Pages 119.

At the time the invention, it would have been obvious to a person of ordinary skill in the art to combine Auerbach's with Huitema's invention. The suggestion/motivation for doing so would have Auerbach discloses compute the shortest or most effective paths. And the benefit to find the utilize IGP to find the shortest path (CharOSPF) is so that it can shorten the processing time as well as the commends from the host node can transfer more efficiently.

3). Referring to Claim 59,

Auerbach discloses a routing information protocol refer to Col 8, Lines 1-40.

Auerbach does not expressly discloses CharRIP.

Huitama discloses CharRIP refer to Pages 120.

At the time the invention, it would have been obvious to a person of ordinary skill in the art to combine Auerbach's with Huitema's invention. The suggestion/motivation for doing so would have Auerbach discloses the need of using the routing information protocol. And the benefit to using the Routing Information Protocol is so that all the nodes can have a copy of the network and can be regulated efficiently via a host node.

4). Referring to Claims 13, 32, and 42

Auerbach discloses a bit vectors of said defined characteristic and some of said defined characteristics is determinable by said sender node and included in said packet refer Col 2, Lines 35-51, and Col 6, Lines 1-25.

Auerbach does not expressly disclose an angle, which indicate how close the packet and nodes characteristic match.

Huitema discloses an angle between said bit vectors, refer to Pages 85-104.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Auerbach and Huitema's inventions. The suggestion/motivation for doing so would have been Auerbach way to find the shortest path in the routing protocol. By utilizing the distance vector algorithm, when the matrix is similar, it is indicating that the angle between the vectors are small, otherwise, the angle is big, which indicates the closeness of the nodes.

III. Claims 63, 64, 66, 67 and 72-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach et al. hereinafter Auerbach (US 5,355,371) in view of Glover (US 5,412,429) in further view of Grantham et. al. hereinafter Grantham (US 6,073,160).

1) Referring to Claim 63, 66, and 72,

Glover indicates a filter refer to Col 7, Lines 20-30.

Auerbach and Glover does not expressly discloses a Bloom filters

Grantham discloses a Bloom filters, refer to Col 14, Lines 25-50.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach, Glover and Granthams' invention. The motivation and suggestion is that Auerbach discusses there is a need to involve using high bandwidth packet traffic, thus it is important to pay attention to the bandwidth capacity in the system. By utilizing the compression technique, it can ensure that the bandwidth capacity being use wisely. However, by utilizing the compression technique, the filter is required. Glover discussed the usage of filter along with his compression technique. Then Grantham indicates the usage of a bloom filter, by utilizing a specific Bloom filter,

it reduces the ratio of network failure. Also it can avoid interruption of ongoing communication.

3). Referring to Claim 64, 67, and 75

Glover indicates a filter refer to Col 7, Lines 20-30.

Auerbach and Glover does not expressly discloses a Bloom filters

Grantham discloses a Bloom filter has four hash functions refer to Col 14, Lines 25-60.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach, Glover and Granthams' invention. The motivation and suggestion is that Grantham discussed the usage of multiple hash function, which it would have been obvious for the person of ordinary skill in the art to use a particular number of hash functions for the Bloom filter. By utilizing a Bloom filter with a specific numbers of hash functions, it reduces the chance of system failure.

4). Referring to Claim 73,

Glover indicates a filter refer to Col 7, Lines 20-30.

Auerbach and Glover does not expressly discloses a Bloom filters

Grantham discloses Bloom filters have k hash functions greater than or equal to 4, refer to Col 14, Lines 25-60.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach, Glover and Granthams' invention. The motivation and suggestion is that Grantham discussed the usage of a Bloom filter consists of multiple hash function, by utilizing more than one Bloom filters, the number of hash increases as

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well. which it would have been obvious for the person of ordinary skill in the art to use numbers of bloom filters and numbers of hash functions. By utilizing more than one Bloom filter with a specific numbers of hash functions, it is high recommended to use Bloom filter when there is hierarchy data presented in the system to prevent the replay attack.

5). Referring to Claim 74,

Glover indicates a filter refer to Col 7, Lines 20-30.

Auerbach and Glover does not expressly discloses a Bloom filters

Grantham discloses Bloom filters have k hash functions ranging from 3 to 6, refer to Col 14, Lines 25-60.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach, Glover and Granthams' invention. The motivation and suggestion is that Grantham discussed the usage of a Bloom filter consists of multiple hash function, by utilizing more than one Bloom filters, the number of hash increases as well. which it would have been obvious for the person of ordinary skill in the art to have set a particular numbers of bloom filters and a particular numbers of hash functions. By utilizing more than one Bloom filter with a specific numbers of hash functions, it is high recommended to use Bloom filter when there is hierarchy data presented in the system to prevent the replay attack.

IV. Claim 76 is rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach et al. hereinafter Auerbach (US 5,355,371) in view of Glover (US 5,412,429)

and Grantham et. al. hereinafter Grantham (US 6,073,160) in further view of Gennaro et al hereinafter Gennaro (US 6,311,271).

1). Referring to Claim 76,

Grantham discloses hash functions, refer to Col 14, Lines 25-60.

Auerbach, Glover and Grantham does not indicate MD5 signatures

Gennaro discloses k hash functions are calculated by computing MD5 signatures of said characteristics, refer to Col 5, Lines 59-67.

At the time the invention, it would have been obvious to person of ordinary skill in the art to combine Auerbach, Glover and Granthams' invention. The motivation and suggestion is that Grantham discussed the usage of a Bloom filter consists of multiple hash function, by utilizing more than one Bloom filters, and Auerbach discuss the intent of using the packet routing protocol method in the high speed network environment. It would have been obvious by computing the hash function by calculating MD5 signature, it could improve the overall network performing efficiency by reducing the number of verification in the data stream.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

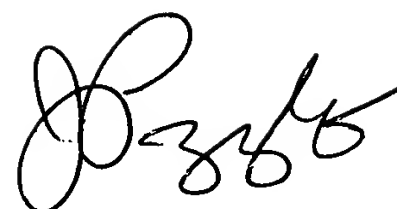
- US 5,128,926 (Perlaman et al discloses an updating state information in the network).
- US 5,363,235 (Ernst et al. discloses a location based selective distribution of generally broadcast information).
- US 5,777,989 (McGarvey discloses TCP/IP host name resolution for machines on several domains).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen C Tang whose telephone number is (571)272-3116. The examiner can normally be reached on M-F 7 - 3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KT

A handwritten signature in black ink, appearing to read 'J. Pezzlo', with a stylized flourish at the end.

JOHN PEZZLO
PRIMARY EXAMINER